

NOAA/DOE Climate Change Detection and Attribution Project

Information Sheet FY2009

Proposals are solicited on all aspects of climate change detection and attribution. Detection is the process of demonstrating that an observed change in climate is unusual, i.e., that the observed change is large relative to estimates of natural climate variability. We broaden this standard definition to include those proposals that not only document changes in climate, but also focus on producing a data set of adequate quality so as to be able to quantitatively identify interannual, decadal, and longer-term variations and changes.

Detection proposals are encouraged on documenting and assessing variations and changes, especially of weather and climate extremes. Successful proposals will address data set errors in the context of defining significant changes.

Attribution is the process of establishing cause and effect. Attribution proposals will be considered that address part or all of the issues associated with identifying natural climate variability, and making the linkage between specific forcings and observed climate variations and changes, especially as related to extreme events. Critical components of these proposals often will include the use of climate model simulations, statistical techniques, and long-term climate data, including paleoclimate data.

Detection and attribution activities do not necessarily have to be part of the same proposal, e.g., attribution studies often rely on databases and modeling simulations that have already been produced. Proposals will be entertained that either focus solely on detection or attribution or combine both of these activities.

In FY09, proposals will be viewed most favorably if they include one or more of the following foci:

(1) investigations of possible changes in the characteristics of weather/climate extremes (e.g., tropical and extratropical storms, heavy precipitation events, droughts, heat waves, wildfires, severe freezes, cold spells, etc); (2) detection and/or attribution studies at continental and sub-continental scales, as appropriate to the variable(s) being considered, the quality of the historical record, and the spatial/temporal resolvability; and (3) multiple-model approaches to further validate detection results.

As noted, there will be a special emphasis on producing data sets that address weather/climate extremes and/or the detection/attribution of these extremes and their changing character, both historical and projected. Studies that analyze extremes should address the limitations of the observational record (e.g., spatial/temporal resolution; continuity; homogeneity; biases) and/or the limitations of the modeling approaches (e.g., high resolution global models; regional models; various downscaling techniques). Observations should be used to constrain and validate model results. Model studies should consider addressing the mechanisms that may change extremes in the future as part of any attribution work.

Extremes defined solely by statistical properties may not have large impacts on human or natural systems. Conversely, an event may not be an extreme in a strictly statistical sense, but still have a large impact. Extremes to be considered here are those that have substantial impact on human or natural systems (e.g., energy, agriculture, forestry, water,

health, man-made infrastructure).

Although extremes often are single, episodic events, there also may be cumulative events that cause major, or irreversible, impacts once a “threshold” is exceeded, e.g., levels of temperature or precipitation beyond which an impact becomes large. The changing frequency, intensity, duration, or timing of a stressor can be such a trigger for a human or natural system.

TECHNICAL DETAILS

Proposals will be considered for up to three years in duration, but one and two year proposals are encouraged. Funds for each subsequent year of multi-year proposals will be subject to a review of annual progress reports.

Proposals that involve modeling are encouraged to use model output from other studies or demonstrate that proposed model runs will receive substantial support from other sources.

Those proposing should ensure that any data sets produced that document climate change have a dedicated archive identified for the data and indicate in the proposal the final disposition of the data.